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INFUSION NURSING

STANDARDS OF PRACTICE

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Perucca R. Obtaining vascular access. In: Hankins J, Lonsway RAW, Hedrick C, Perdue MB, eds. *Infusion Therapy in Clinical Practice.* 2nd ed. Philadelphia: WB Saunders; 2001:375-388.

40. LOCAL ANESTHESIA

Standard

40.1 Protocols for the use of local anesthesia shall be established in organizational policies and procedures, practice guidelines, and in accordance with the state's Nurse Practice Act, and rules and regulations promulgated by the state Board of Nursing.
40.2 Local anesthesia administration shall be considered based upon nursing assessment of patient needs.
40.3 When local anesthesia is ordered or required, the agent that is least invasive and carries least risk for allergic reaction shall be considered first.

Practice Criteria

A. Local anesthetic agents including, but not limited to, intradermal lidocaine, iontopheresis, low-frequency ultrasonification, pressure-accelerated lidocaine, or topical transdermal agents, should be considered and used according to organizational policies and procedures and manufacturer's labeled use(s) and directions.
B. The nurse administering local anesthesia should have demonstrated competency and knowledge of the anesthetic agent to be used and method of administration.
C. Use of topical anesthetics prior to painful dermal procedures in children should be encouraged, in addition to use of adjunctive and less invasive anesthetic and anxiolytic therapies.
D. Use of local anesthetic should be monitored because of the potential for allergic reaction, tissue damage, or inadvertent injection of the drug into the vascular system.

REFERENCES

American Academy of Pediatrics. Committee on Psychosocial Aspects of Child and Family Health; Task Force on Pain in Infants, Children, and Adolescents. The assessment and management of acute pain in infants, children and adolescents. *Pediatrics.* 2001;108(3): 793-797.

Becker B, Helfrich S, Baker E, Lovgren K, Minugh A, Machan J. Ultrasound with topical anesthetic rapidly decreases pain of intravenous cannulation. *Acad Emerg Med.* 2005 Apr;12(4):289-295.

Brown D. Local anesthesia for vein cannulation: a comparison of two solutions. *J Infus Nurs.* 2004;27(2):85-88.

Cummings E, Graham J, Finley G, McGrath P, Ritchie J. Prevalence and source of pain in pediatric inpatients. *Pain.* 1996;68(1):25-31.

Fry C, Aholt D. Local anesthesia prior to the insertion of peripherally inserted central catheters. *J Intraven Nurs.* 2001;24(6):404-408.

Hattula J, McGovern E, Neumann T. Comparison of intravenous cannulation injection preanesthetics in adult medical inpatient population. *Appl Nurs Res.* 2002;15(3):189-193.

Kleiber C, Sorenson M, Whiteside K, Gronstal A, Tannous R. Topical anesthetics for intravenous insertion in children. *Pediatrics.* 2002; 110(4);758-761.

Luhmann J, Hurt S, Shootman M, Kennedy R. A comparison of buffered lidocaine versus ELA-Max before peripheral intravenous catheter insertions in children. *Pediatrics.* 2004;113 (3 Pt 1): e217-e220.

Migdal M, Chudzynska-Pomianowska E, Vause E, Henry E, Lazar J. Rapid, needle-free delivery of lidocaine for reducing the pain of venipuncture among pediatric subjects. *Pediatrics.* 2005;115(4): e393-e398.

Miller KA, Balakrishnan G, Eichbauer G, Betley K. 1% lidocaine injection, EMLA™ cream, or Numby Stuff™ for topical analgesia associated with peripheral intravenous cannulation. *AANA J.* 2001; 69(3): 185-187.

Moureau N, Zonderman A. Does it always have to hurt? Premedications for adult and children for use with intravenous therapy. *J Intraven Nurs.* 2000;23(4):213-219.

Perucca R. Obtaining vascular access. In: Hankins J, Lonsway RAW, Hedrick C, Perdue MB, eds. *Infusion Therapy in Clinical Practice.* 2nd ed. Philadelphia: WB Saunders; 2001:375-388.

Wallace MS, Ridgeway B, Jun E, Schulteis G, Rabussay D, Zhang L. Topical delivery of lidocaine in healthy volunteers by electroporation, electroincorporation, or iontophoresis: an evaluation of skin anesthesia. *Reg Anesth Pain Med.* 2001;26(3):229-238.

Yaster M, Krane EJ, Kaplan RF, Cote CJ, Lappe DG. *Pediatric Pain Management and Sedation.* St. Louis: Mosby-Year Book; 1997.

Zempsky WT, Cravero JP; American Academy of Pediatrics Committee on Pediatric Emergency Medicine and Section on Anesthesiology and Pain Medicine. Relief of pain and anxiety in pediatric patients in emergency medical systems. *Pediatrics.* 2004 Nov; 114(5):1348-1356.

Zempsky WT. Reduction of pain associated with minor procedures in children: new topical anesthetics on the horizon. *Business Briefing: US Pediatric Care;* 2005:19-22.

41. ACCESS SITE PREPARATION

Standard

41.1 The nurse shall prepare the intended insertion site with antiseptic solution(s) using aseptic or sterile technique as appropriate.
41.2 Maximal barrier precautions including sterile gown, powder-free sterile gloves, cap, mask, protective eyewear, and large sterile drapes and towels shall be used for midline and peripherally inserted central catheter and all other central catheter insertions.

Practice Criteria

A. Hand hygiene procedures should be observed (see Standard 20, *Hand Hygiene*).
B. Protocols for site preparation should be established in organizational policies and procedures and practice guidelines.
C. The process for applying the chosen antiseptic agent is dependent upon and should be consistent with the manufacturer's labeled use(s) and directions.
D. After initial access site preparation, powder-free sterile gloves should be changed prior to midline, arterial, central, and peripherally inserted central catheter placement.
E. Clipping should be performed to remove excess hair at intended vascular access site when necessary, prior to site preparation procedure(s) (see Standard 39, *Hair Removal*).
F. Intended insertion site should be clean prior to application of antiseptic solution(s).
G. Antiseptic solutions that should be used include alcohol, chlorhexidine gluconate, povidone-iodine, and tincture of iodine, as single agents or in combination, used individually or in series. Formulations containing a combination of alcohol (ethyl or isopropyl) and either chlorhexidine gluconate or povidone-iodine are preferred.
H. Antiseptic solutions in a single-unit use configuration should be used.
I. Alcohol should not be applied after the application of povidone-iodine preparation.
J. Alcohol should be applied after the application of tincture of iodine.
K. The antiseptic preparation solution(s) should be allowed to air-dry completely before proceeding with the access device insertion procedure.
L. The use of chlorhexidine gluconate in infants weighing < 1000 grams has been associated with contact dermatitis and should be used with caution in this patient population.
M. For neonates, isopropyl alcohol or products containing isopropyl alcohol are not recommended for access site preparation. Povidone-iodine or chlorhexidine gluconate solution is recommended but requires complete removal after the preparatory procedure with sterile water or sterile 0.9% sodium chloride (USP) to prevent product absorption.

REFERENCES

Association for Women's Health, Obstetric and Neonatal Nurses. *Neonatal Skin Care: Evidence-based Clinical Practice Guidelines.* Glenview, IL: AWHONN; 2001.

Centers for Disease Control and Prevention. Guidelines for the prevention of intravascular catheter-related infections. *MMWR* (RR-10). 2002; 51.

Chaiyakunapruk N, Veenstra DL, Lipsky BA, Saint S. Chlorhexidine compared with povidone-iodine solution for vascular catheter-site care: meta-analysis. *Ann Intern Med.* 2002;136(11):792-801.

Chaiyakunapruk N, Veenstra DL, Lipsky BA, Sullivan SD, Saint S. Vascular catheter site care: the clinical and economic benefits of chlorhexidine gluconate compared with povidone-iodine. *Clin Infect Dis.* 2003;37(6):764-771.

Dickinson L, Garland L. Nursing management of NCPAP in preterm infants: evidence-based reduction of skin breakdown. Program and abstracts of the National Association of Neonatal Nurses 19th Annual Conference; Palm Springs, CA: October 8-11, 2003.

Garland JS, Alex CP, Mueller CD, et al. A randomized trial comparing povidone-iodine to a chlorhexidine gluconate-impregnated dressing for prevention of central venous catheter infections in neonates. *Pediatrics.* 2001;107(6):1431-1436.

Hibbard JJ. Analysis comparing the antimicrobial activity and safety of current antiseptic agents. *J Infus Nurs.* 2005;28(3):194-207.

National Kidney Foundation/Dialysis Outcomes Quality Initiative. Clinical practice guidelines for vascular access: update 2000. *Am J Kidney Dis.* 2001; 37(Suppl 1):S137-S181.

Perucca R. Obtaining vascular access. In: Hankins J, Lonsway RAW, Hedrick C, Perdue MB, eds. *Infusion Therapy in Clinical Practice.* 2nd ed. Philadelphia: WB Saunders; 2001:375-388.

Pettit J. Assessment of the infant with a peripheral intravenous device. *Adv Neonatal Care.* 2003;3(5):230-240.

Traore O, Allaert FA, Fournet-Fayard S, Verriere JL, Laveran H. Comparison of in-vivo antibacterial activity of two skin disinfection procedures for insertion of peripheral catheters: povidone-iodine versus chlorhexidine gluconate. *J Hosp Infect.* 2000 Feb; 44(2):147-150.

42. CATHETER PLACEMENT

Standard

42.1 The nurse shall demonstrate competency in and knowledge of catheter placement according to the state's Nurse Practice Act, rules and regulations promulgated by the state's Board of Nursing, organizational policies and procedures, and practice guidelines.
42.2 Only one catheter shall be used for each cannulation attempt.
42.3 Midline catheters shall have the distal tip dwelling in the basilic, cephalic, or brachial vein, at or below the axillary level and distal to the shoulder.
42.4 Central vascular access devices shall have the distal tip dwelling in the lower one third of the superior vena cava to the junction of the superior vena cava and the right atrium. Those central vascular access devices using the femoral approach shall have the distal tip dwelling in the thoracic inferior vena cava above the level of the diaphragm.
42.5 Central catheter tip location shall be determined radiographically and documented prior to initiation of the prescribed therapy.

Kuhle S, Massicotte P, Chan A, et al. Systemic thromboembolism in children. Data from the 1 800 NO CLOTS Consultation Service. *Thromb Haemost.* 2004;2(4):722-728.

Lagging L, Aneman C, Nenonen N, et al. Nosocomial transmission of HCV in a cardiology ward during the window phase of infection: An epidemiological and molecular investigation. *Scand J Infect Disease.* 2002;34(8):580-582.

Lam A, Chen Y, Yang K, Tsai C, Perng R. Disconnection of a venous Port-A-Cath followed by embolization after saline flush: rare case report. *Jpn J Clin Oncol.* 1999;29(12):643-644.

Macklin D. What's physics go to do with it? *J Vasc Access Devices.* 1999;4(2):7-13.

Mattner F, Gastmeier P. Bacterial contamination of multiple-dose vials; a prevalence study. *Am J Infect Control.* 2004;32(1):12-16.

Niesen K, Harris D, Parkin L, Henn L. The effects of heparin versus normal saline for maintenance of peripheral intravenous locks in pregnant women. *J Obstetr Gynecol Neonatal Nurs.* 2003;32(4):503-508.

Perucca R. Infusion monitoring and catheter care. In: Hankins J, Lonsway RAW, Hedrick C, Perdue MB, eds. *Infusion Therapy in Clinical Practice.* 2nd ed. Philadelphia: WB Saunders; 2001:395-396.

Polaschegg H, Shah C. Overspill of catheter locking solution: safety and efficacy aspects. *ASAIO J.* 2003;49(6):713-715.

Shah P, Ng E, Sinha A. Heparin for prolonging peripheral intravenous catheter use in neonates. *Cochrane Database Syst Rev.* 2002;(4):CD002774. Review.

Silini E, Locasciulli A, Santoleri L, et al. Hepatitis C virus infection in a hematology ward: evidence for nosocomial transmission and impact on hematologic disease outcome. *Haematologica.* 2002;87(11):1200-1208.

Warkentin T. An overview of the heparin-induced thrombocytopenia syndrome. *Semin Thromb Hemost.* 2004;30(3):273-283.

Widell A, Christensson B, Wiebe T, et al. Epidemiologic and molecular investigation of outbreaks of hepatitis C virus infection on a pediatric oncology service. *Ann Intern Med.* 1999;130(2):130-134.

51. CATHETER SITE CARE

Standard

51.1 Catheter site care shall be performed using aseptic technique and observing Standard Precautions, and shall coincide with dressing changes.

51.2 Catheter site care shall allow for the observation and evaluation of the catheter-skin junction and surrounding tissue.

Practice Criteria

A. Hand hygiene procedures should be observed (see Standard 20, *Hand Hygiene*).

B. Protocols for catheter site care should be established in organizational policies and procedures and practice guidelines.

C. Antiseptic solutions should be used in accordance with manufacturer's labeled use(s) and directions. The use of sterile gloves and mask should be used when catheters have extended dwell times, when the catheter tip is centrally located, or when the patient is immunocompromised.

D. Catheter site care should consist of sterile cleansing of the catheter-skin junction with an appropriate antiseptic solution(s), application of a new stabilization device, and application of a sterile dressing.

E. Antiseptic solutions that should be used include alcohol, chlorhexidine gluconate, povidone-iodine, and tincture of iodine, as single agents or in combination, used individually or in series. Formulations containing a combination of alcohol (ethyl or isopropyl) and either chlorhexidine gluconate or povidone-iodine are preferred (see Standard 41, *Access Site Preparation*).

F. Organic solvents such as acetone and acetone-based products should not be applied to the skin prior to insertion of a catheter or during dressing changes.

G. The use of chlorhexidine gluconate in infants weighing < 1000 grams has been associated with contact dermatitis and should be used with caution in this patient population.

H. For neonates, isopropyl alcohol or products containing isopropyl alcohol are not recommended for access site care. Povidone-iodine or chlorhexidine gluconate solution is recommended but requires complete removal after the preparatory procedure with sterile water or sterile 0.9% sodium chloride (USP) to prevent product absorption.

I. Documentation of catheter site care should reflect the condition of the catheter and access site, patient's response, and specific nursing actions taken to resolve or prevent adverse reactions and should be recorded in the patient's permanent medical record (see Standard 14, *Documentation*).

REFERENCES

Association for Women's Health, Obstetric and Neonatal Nurses. *Neonatal Skin Care: Evidence-based Clinical Practice Guidelines.* Glenview, IL: AWHONN; 2001.

Carson SM. Chlorhexidine versus povidone-iodine for central venous catheter site care in children. *J Pediatr Nurs.* 2004;19(1):74-80. Review. Erratum in: *J Pediatr Nurs.* 2004 Apr;19(2):156.

Centers for Disease Control and Prevention. Guidelines for the prevention of intravascular catheter-related infections. *MMWR* (RR-10). 2002; 51.

Chaiyakunapruk N, Veenstra DL, Lipsky BA, Saint S. Chlorhexidine gluconate compared with povidone-iodine solution for vascular catheter-site care: a meta-analysis. *Ann Intern Med.* 2002;136(11):792-801.

Chaiyakunapruk N, Veenstra DL, Lipsky BA, Sullivan SD, Saint S. Vascular catheter site care: the clinical and economic benefits of chlorhexidine gluconate compared with povidone-iodine. *Clin Infect Dis.* 2003;37(6):764-71. Epub 2003 Aug 27.